Diagnosis, prognosis and treatment of pulmonary diseases

ABSTRACT

The present invention provides methods to protect a subject from a respiratory disorder involving an airway obstructive disease such as asthma or chronic obstructive pulmonary disease. Provided are methods to protect a subject from an airway obstructive disease using gene therapy. Methods are provided for supplying FoxA2 function to cells of the lung and airway, such as smooth muscle and epithelial cells, by FoxA2 gene therapy. The FoxA2 gene, a modified FoxA2 gene, or a part of the gene may be introduced into the cell in a vector such that the gene remains extrachromosomal or may be integrated into the subjects chromosomal DNA for expression. These methods provide for administering to a subject in need of such treatment a therapeutically effective amount of a FoxA2 gene, or pharmaceutically acceptable composition thereof, for overexpressing the FoxA2 gene. Such methods of expressing the administered FoxA2 gene in the lungs and airway provide for: (1) preventing or alleving bronchial hyperresponsiveness; (2) preventing or alleving of an airway obstructive disease, e.g., bronchial hyperreactivity, airway hyperresponsiveness, asthma or chronic obstructive pulmonary disorder ("COPD"); (3) reducing the airway resistance response to inhaled natural or synthetic bronchoconstrictors or allergens or to exercise; and (4) enhancing responsiveness (relaxation) of airway tissues to β-agonists.